IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Currently Amended) A scalable system for providing real time communication services between user devices, the scalable system comprising:

at least one call control element (CCE) providing system call control functions;

at least one ~~a~~ scalable border element (BE) providing scalable system interface functions and in communication with said CCE;

a first user device for initiating a call and in communication with said ~~at least one~~ scalable BE; and

a second user device acting as a call destination device and in communication with said ~~at least one~~ scalable BE, wherein the ~~at least one~~ scalable border element comprises:

a BE signaling entity providing BE signaling functions and in communication with said CCE;

a first BE media entity providing BE media functions in communication with said BE signaling entity and in communication with said first user device for initiating a call; and

a second BE media entity providing BE media functions in communication with said BE signaling entity, in communication with said first BE media entity for media transfers and in communication with a second user device acting as a call destination device.

2.   (Currently Amended) The scalable system of claim 1 wherein the ~~at least one~~ scalable border element (BE) providing scalable system interface functions further comprises:

signaling functions including call setup signaling functions;

media control functions including transcoding functions;

security functions including firewall and encryption and decryption functions; and

call admission control functions including call authentication functions.

3. (Canceled)

4. (Previously Presented) The scalable system of claim 1 wherein the BE signaling functions further comprises:

user agent functions;

proxy functions; and

back to back user agent functions.

5. (Previously Presented) The scalable system of claim 1 wherein the BE media functions further comprises:

dual tone multi-frequency (DTMF) digit detection;

real time protocol (RTP) re-origination;

firewall/NAT functions; and

media transcoding functions.

6. (Original) The scalable system of claim 5 further comprises:

at least one application server (AS) providing at least one scalable system service function and in communication with said CCE.

7. (Original) The scalable system of claim 1 wherein the communication with said CCE uses a session initiation protocol (SIP).

8. (Previously Presented) The scalable system of claim 1 wherein the said communication with the BE signaling entity is a master/slave protocol where the BE signaling entity acts as the master and the BE media entity acts as the slave.

9. (Previously Presented) The scalable system of claim 1 further comprises:

said first BE media entity and said second BE media entity located physically apart from each other and in closer proximity to said user devices than to said BE signaling entity; and

a call being placed between the said first and second user devices comprising signaling messages and media transfers, wherein the timing threshold for the signaling messages is less than a few seconds and the timing threshold for the media transfers is less than 300 milliseconds or a value not to exceed the perceptible limit of naturalness of interactive human communication.

10.   (Original) The scalable system of claim 6 wherein upon a DTMF digit is detected by the BE media entity the BE media entity notifies the BE signaling entity of DTMF digit detection which notifies the AS of the event over a separate signaling path.

11.   (Original) The scalable system of claim 1 further comprises:

a call admission control (CAC) entity in communication with said scalable BE and in communication with said CCE;

a media server (MS) entity in communication with said CCE;

a service broker (SB) entity in communication with said CCE; and

a network routing engine (NRE) in communication with said CCE.

12.   (Currently Amended) The scalable system of claim 1 wherein the ~~at least one~~ scalable border element further comprises:

~~a BE signaling entity providing BE signaling functions and in communication with said CCE;~~

~~a first BE media entity providing BE media functions in communication with said BE signaling entity;~~

~~a second BE media entity providing BE media functions in communication with said BE signaling entity and in communication with said first BE media entity for media transfers;~~

a first BE firewall/network address translation (FW/NAT) entity providing BE FW/NAT functions in communication with said first BE media entity and in communication with said first user device for initiating a call; and

a second BE firewall/network address translation (FW/NAT) entity providing BE FW/NAT functions in communication with said second BE media entity and in communication with said second user device acting as a call destination device.

13.   (Original) The scalable system of claim 12 wherein the BE media functions further comprises:

dual tone multi-frequency (DTMF) digit detection;

real time protocol (RTP) re-origination; and

media transcoding functions.

14.   (Currently Amended) The scalable system of claim [[1]] 12 wherein the at least one scalable border element further comprises:

a BE signaling entity providing BE signaling functions and in communication with said CCE;

at least one media transcoding entity providing BE media transcoding functions;

a first BE media entity providing BE media functions in communication with said BE signaling entity and in communication with said at least one media transcoding entity;

a second BE media entity providing BE media functions in communication with said BE signaling entity, in communication with said first BE media entity for media transfers and in communication with said at least one media transcoding entity;

a first BE firewall/network address translation (FW/NAT) entity providing BE FW/NAT functions in communication with said first BE media entity and in communication with said first user device for initiating a call; and

~~a second BE firewall/network address translation (FW/NAT) entity~~

~~providing BE FW/NAT functions in communication with said second BE media~~

~~entity and in communication with said second user device acting as a call~~

~~destination device.~~

15. (Original) The scalable system of claim 14 wherein the BE media

functions further comprises:

dual tone multi-frequency (DTMF) digit detection; and

real time protocol (RTP) re-origination.

16. (Currently Amended) A method of connecting a call between user devices

comprising:

connecting a first user device for initiating a call to ~~at least one~~ a scalable

border element (BE), wherein the ~~at least one~~ scalable border element

comprises:

a BE signaling entity providing BE signaling functions and in

communication with said CCE;

a first BE media entity providing BE media functions in

communication with said BE signaling entity and in communication with

said first user device; and

a second BE media entity providing BE media functions in

communication with said BE signaling entity, in communication with said

first BE media entity for media transfers and in communication with a

second user device acting as a call destination device;

receiving in the BE signaling entity a signaling message from said first

user device to setup a call;

communicating the signaling message from the BE signaling entity to a

call control element (CCE) that manages the call flow process and determines a

path to a destination user device and a second BE media entity associated with

said second user device;

opening pinholes for media streams;

connecting the said first BE media entity to the second BE media entity for media transfers;

communicating between the CCE and the second BE media entity to determine if transcoding is required and if it is invoking the appropriate BE media entity to provide the transcoding function; and

establishing the call connection between the first user device initiating the call and the second user device.

17.   (Previously Presented) The method of claim 16 wherein the call connection may be terminated, the method further comprises:

communicating between said CCE and said BE signaling entities when either of said first user device or said second user device indicates it is ending the call; and

communicating call termination from said CCE to said first and second BE media entities to close the pinholes thereby terminating the call.

18.   (Original) The method of claim 16 wherein said CCE that manages of the call flow process and determines the destination BE and its associated BE media entity further comprises:

communicating with a service broker to determine whether a service feature is required;

communicating with an application server to service the call; and

communicating with a media server to provide media stream functions if required.

19.   (Previously Presented) A border element (BE) signaling entity providing signaling functions to a plurality of connected BE media entities providing media functions and a connected call control element (CCE), the BE signaling entity comprising:

a communication interface to said plurality of connected BE media entities, wherein said plurality of connected BE media entities and said BE signaling entity

comprise a decomposed BE configured to act as a single integrated functional entity; and

a communication interface to said CCE.

20.   (Original) The BE signaling entity of claim 19 wherein the communication interface to said CCE is SIP.

21.   (Original) The BE signaling entity of claim 19 wherein the communication interface to said BE media entity is a master-slave protocol with the BE signaling entity the master and the BE media entity the slave.

22.   (Original) The BE signaling entity of claim 21 wherein the master-slave protocol is media gateway control protocol (MGCP) or media gate control protocol (MEGACO) or internet protocol device control (IPDC).

23.   (Original) The BE signaling entity of claim 19 wherein the BE signaling functions further comprises:

user agent functions;

proxy functions; and

back to back user agent functions.

24.   (Original) The BE signaling entity of claim 19 wherein the BE media functions further comprises:

dual tone multi-frequency (DTMF) digit detection;

real time protocol (RTP) re-origination;

firewall/NAT functions; and

media transcoding functions.

25.   (Previously Presented) A border element (BE) media entity providing media functions to a connected user device and a connected BE signaling entity providing signaling functions, the BE media entity comprising:

a communication interface to said BE signaling entity;

a communication interface to at least one other BE media entity that is connected to a different user device, wherein said BE media entity, said BE signaling entity and said at least one other BE media entity comprise a decomposed BE configured to act as a single integrated functional entity; and

a communication interface to said connected user device.

26.   (Original) The BE media entity of claim 25 wherein the communication interface to said BE signaling entity is a master-slave protocol with the BE signaling entity the master and the BE media entity the slave.

27.   (Original) The BE media entity of claim 26 wherein the master-slave protocol is media gateway control protocol (MGCP) or media gate control protocol (MEGACO) or internet protocol device control (IPDC).

28.   (Original) The BE media entity of claim 25 wherein the BE signaling functions further comprises:

user agent functions;

proxy functions; and

back to back user agent functions.

29.   (Original) The BE media entity of claim 25 wherein the BE media functions further comprises:

dual tone multi-frequency (DTMF) digit detection;

real time protocol (RTP) re-origination;

firewall/NAT functions; and

media transcoding functions.

30.   (Original) The BE media entity of claim 25 wherein the communication interface to at least one other BE media entity uses real time protocol (RTP).

31.   (Original) A decomposed border element (BE) providing interface functions for a scalable system at the interface boundary between the scalable system and network connected user devices external to the scalable system, the decomposed BE comprising:

a BE signaling entity providing BE signaling functions and in communication with call control functions of the scalable system; and

a BE media entity providing BE media functions in communication with said BE signaling entity, in communication with a different BE media entity for media transfers and in communication with at least one user device.

32.   (Original) The decomposed BE of claim 31 wherein the interface functions futher comprises:

signaling functions including call setup signaling functions;

media control functions including transcoding functions;

security functions including firewall and encryption and decryption functions; and

call admission control functions including call authentication functions.

33.   (Original) The decomposed BE of claim 32 wherein the call setup signaling functions further comprises:

access control functions for security;

quality of service functions; and

accounting functions.

34.   (Original) The decomposed BE of claim 32 wherein the transcoding functions further comprises:

determination whether transcoding is required;

determining the type of transcoding required;

setting up the path to include transcoding if required; and

transcoding the communications between connected users if required.

35.   (Original) The decomposed BE of claim 31 wherein the BE signaling functions further comprises:

user agent functions;

proxy functions; and

back to back user agent functions.

36.   (Original) The decomposed BE of claim 31 wherein the communication with call control functions uses a session initiation protocol (SIP).

37.   (Original) The decomposed BE of claim 31 wherein the BE media functions further comprises

dual tone multi-frequency (DTMF) digit detection;

real time protocol (RTP) re-origination;

firewall/NAT functions; and

media transcoding functions.

38.   (Original) The decomposed BE of claim 31 wherein the communication with said BE signaling entity is a master/slave protocol with the BE signaling entity the master and the BE media entity the slave.

39.   (Original) The decomposed BE of claim 38 wherein the master-slave protocol is media gateway control protocol (MGCP) or media gate control protocol (MEGACO) or internet protocol device control (IPDC).

40.   (Original) The decomposed BE of claim 31 wherein the communication with a different BE media entity uses real time protocol (RTP).

41.   (Original) The decomposed BE of claim 31 wherein the communication with at least one user device uses RTP and SIP.

42.   (Currently Amended) A computer-readable medium encoded with computer executable instructions that when executed cause a computer system to perform call connection services between user devices using a decomposed border element (BE) elements (BEs), made up of at least one BE signaling entity and a plurality of BE media entities, between the user devices and the computer system, by performing [[the]] steps of:

connecting a user device for initiating a call to a first BE media entity and to a BE signaling entity;

receiving in the BE signaling entity a signaling message from a user device to setup a call;

communicating the signaling message from the BE signaling entity to a call control element (CCE) that manages the call flow process and determines a path to a destination user device and a second BE media entity associated with the destination user device;

opening pinholes for media streams;

connecting the said first BE media entity to the second BE media entity for media transfers;

communicating between the CCE and the second BE media entity to determine if transcoding is required and if it is invoking the appropriate BE media entity to provide the transcoding function; and

establishing a call connection between the user device initiating the call and the destination user device.

43.   (Original) The computer readable medium of claim 42 wherein the call connection may be terminated, by further performing the steps of:

communicating between said CCE and said BE signaling entities when either said user device indicates it is ending the call; and

communicating call termination from said CCE to said first and second BE media entities to close the pinholes thereby terminating the call.

44.   (Original) The computer readable medium of claim 42 wherein said CCE that manages of the call flow process and determines the destination BE and its associated BE media entity by further performing the steps of:

communicating with a service broker to determine whether a service feature is required;

communicating with an application server to service the call; and

communicating with a media server to provide media stream functions if required.